DOCUMENT RESUME

ED 481 758 HE 036 306

AUTHOR	Ehrenberg, Ronald G.
TITLE	The Supply of American Higher Education Institutions.
INSTITUTION	Cornell Univ., Ithaca, NY.
SPONS AGENCY	Ford Foundation, New York, NY.
PUB DATE	2000-00-00
NOTE	22p.; Prepared by the Cornell Higher Education Research Institute (CHERI). Paper prepared for the Forum for the Future of Higher Education (Aspen, CO, September 24-27, 2000).
AVAILABLE FROM	For full text: http://www.ilr.cornell.edu/cheri/ wp/cheri_wp11.pdf.
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Educational Finance; *Educational Trends; Financial Support; *Higher Education; *Income; *Private Colleges; *Public Colleges

ABSTRACT

In spite of the fact that the vast majority of U.S. students attend public institutions, much less is known about their behavior and how the states that support them interact with them and with the private institutions within the state's boundaries. This paper summarizes some of the things that are known and outlines some issues that still need attention from researchers. A focus is on research issues that are raised by the growing proprietary, or for-profit, accredited higher education sector, the growth of distance learning, and the pressures on institutions to diversify their revenue streams. The need for institutions to diversify their revenue streams is a need that is shared more generally by almost all public and private nonprofit higher educational institutions. How institutions diversity their revenue streams will depend largely on the nature of each institution and the local conditions it faces. Whether the strategies institutions are pursuing vary systematically and the relationships between distance education and finances are among the questions researchers still need to answer. (SLD)

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Revised Draft
April 11, 2001
Comments Solicited

ED 481 758

The Supply of American Higher Education Institutions

by

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(Prepared for the meeting of the Forum for the Future of Higher Education, Aspen Colorado, September 24-27, 2000)

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HE033060

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I. The Evolution of the American Higher Education System

The American higher education system is the envy of the rest of the world. At the start of the 21st century it is a mixed system of over three thousand eight hundred public and private degree-granting institutions. It provides access to higher education for a large proportion of our population. Its diversity is extraordinary. At one end of the spectrum are two-year institutions that provide both vocational instruction to prepare students for entering the workforce, as well as academic instruction to prepare students for entry into four-year colleges, At the other end of the spectrum are the large multi-product research universities that provide four-year undergraduate education in a wide variety of liberal arts and applied areas; offer graduate education for professions such as law, medicine, business and education: and undertake research and educate doctoral students.

Slightly more than 43% of the institutions were public; but the public institutions enrolled about 80% of all students in the mid 1990s. American higher education did not start out as a heavily public system. The earliest higher educational institutions in the United States were private institutions that were church related and provided classical undergraduate educations. Even after the passage of the Morrill Acts in 1862 and 1890, that donated public lands and provided funding for the establishment of colleges that would emphasize the study of the agricultural and mechanical arts, only about 20% of all American college students were enrolled in public institutions at the turn of the 20th century. However, by 1940 this proportion had risen to almost 50%.

Goldin and Katz (1999) attribute the growth in public higher education to a number of forces. First, the number of subjects taught in academic institutions increased

as knowledge became specialized due to the increasing application of science to business applications, the growth of the scientific and experimental methods, and the increased importance of academic knowledge in confronting social problems that resulted from an increasingly urban and industrial society. As knowledge and its teaching became more specialized, the optimal size of higher educational institutions expanded and research became increasingly important in higher education.

Second, accompanying the rise of the research institution was the demise of independent professional institutions. Stand-alone professional schools, such as medical colleges, that had come under attack for lax standards increasingly were replaced by professional schools that were associated with universities and could both draw on the academic disciplines already present at the institutions and benefit from the institutions' overall "brand names".

While some private institutions were founded as, or grew into, modern research universities, in the main it was public higher education that grew as a result of these trends. Their secular nature made them well equipped to evolve into modern scientific method oriented institutions. The focus in land grant institutions on problems of importance to the well being of their states' citizens provided them with political support in their states that translated into funding. As the proportion of students who graduated from high school increased and more and more of these students came from lower and middle income families, the low tuition levels of the publics also provided a financial incentive for students to attend them.

The growth in public sector higher education enrollments after World War II was fueled by the GI bill, the continuing increase in high school graduation rates and the

growth of federal financial aid for students that started in the 1970s. With state appropriations for the public institutions often explicitly or implicitly tied to their enrollment levels, the institutions often had incentives to expand their enrollments. In contrast, many of the private institutions, in particular the selective liberal arts colleges choose to keep their enrollments relatively constant. They did so to avoid having to "spread" their endowment resources over a larger number of students, which in turn would reduce the expenditures per student that they could devote to educating their students (Winston 1999a).

In one sense, the American higher education sector is a very dynamic one. During the last quarter of the 20th century, the number of academic institutions increased by about 700. Over half of the increase came in institutions that offered bachelors' degrees and most of these were private institutions. Institutions also evolve, changing Carnegie categories and missions. Institutions either succeed within the group of similar institutions with which they compete, try to evolve into more complex institutions, or die. Some 350 campuses were closed during the last quarter of the 20th century, over half of which again were 4-year institutions and 90 percent of which were privates. Thus the number of higher education institutions that were newly created during the period was well over 1000.

Most of the new institutions that were created were small private ones and had enrollments of less than 500 in the year that they were first observed. Similarly most of the institutions that died during the period were small private ones (Zumeta 1999). Data on the changes in the distribution of institutions across Carnegie Categories over time suggest that institutions that survive typically remain within a category or move up to

higher (larger, more graduate programs, more research programs) categories (Carnegie Foundation, 1994). It is a rare institution that reduces its scope and size and survives.

We do not have a wide base of empirical knowledge about the determinants of entry, growth and exit of institutions or of the characteristics of institutions that change classifications. John E. Kwoka, jr. and Christopher M. Snyder (1999) have conducted an exploratory analysis of institutional entry, growth and exit in higher education, stressing the roles of population size, family income, unemployment and institutional size. Christopher Morphew (2000) has similarly conducted preliminary research on the decision of institutions to change their names from college to university. Among Morphew's hypotheses is that the institutions that do so are seeking to diversify their revenue streams, increase their legitimacy, appeal to a growing adult part-time clientele and seeking to increase donations. Of course sometimes institutional names may not accurately represent what an institution is. Boston College, for example, has long been a university in every sense of the word. It seems clear that the study of the evolution of institutions is a fertile area for future research.

In another sense, American higher education is a much more static sector. Many of the institutions have large capital plants (buildings and equipment) and they rarely change their primary locations. Their expansion does, however, sometimes take the form of establishing branch campuses. The value of the private institutions' capital assets is rivaled in many cases by the value of their financial assets (endowments). Both capital and financial assets contribute to the well being of the institutions and to the educational programs they provide. The ratio of capital assets to financial assets varies widely across institutions; for example in 1995 it varied from .366 to 2.551 across 20 major private

research universities (Ehrenberg (2000a), table 11.1). Research on why different institutions chose different mixes of capital and financial assets would be useful.

An extraordinary amount of research has already been directed towards understanding the behavior of selective private institutions; Clotfelter (1996) and Ehrenberg (2000a) are but two recent examples of this research. In spite of the fact that the vast majority of American students attend public institutions, much less is known about their behavior and how the states that support them interact with them and with the private institutions within the states' boundaries. I turn next to a summary of some of the things that we do know and a set of issues that still needs attention from researchers. In the section that follows, I discuss some research issues that are raised by the growing proprietary, or for-profit, accredited higher education sector, the growth of distance learning, and the pressures on institutions to diversify their revenue streams

II. Public Higher Education and State Policies towards Private Colleges and Universities

The fraction of college students educated in public higher education institutions varies widely across states. To a large extent this reflects history and variations in the prevalence of private institutions in a state. While there are regional patterns, per capita enrollments in public higher education increase as one moves from the east to the south to the midwest to the west, there are also variations within regions. There also is wide variation across states in the levels of tuition and state support for public institutions (Quigley and Rubenfeld, 1993).

Those states with the highest per capita public enrollments tend to spend more per capita then other states. However, other factors clearly matter. For example, in some of

the southern states low expenditure per student private institutions go hand in hand with low expenditure per student public institutions. In contrast, in the northeastern states, the higher expenditures per student are in the private institutions, the lower are the expenditures per student in the public institutions. States with more mobile populations also appear to provide less funding for public higher education ((Stratham, 1994), Clotfelter, 1976)). Similarly, public institutions in states with private institutions that charge higher tuition levels appear to charge higher public tuition levels.

Trying to infer causation from correlations is no simple task. Quigley and Rosenfeld estimated a model of student demand and legislative supply and concluded that the higher the tuition level charged by public institutions in a state, the lower state appropriations appear to be, ceteris paribus. Lowry (forthcoming) finds that less state funding for public institutions leads to higher net (after institutional grant aid) tuition revenue, but that tuition revenue does not influence state funding. While the differences in results between the two papers may be due to differences in model specifications, they also may be due to the difficulty of teasing out behavioral relationships using cross-section data. This is an area of research that cries out for the use of panel data and the study of changes in key variables over time. Alternatively, careful studies such as Hoenack and Pierro (1990) that analyze, among other things, the relationship between state appropriations and tuition levels at a single public university using long time-series of data may be useful.

The characteristics of the relationships between states and the higher educational institutions operating in them vary widely across states. Some states provide direct operating support to private institutions in their state (Zementa 1992, 1996). An example

of this type of aid is the Bundy aid program in New York State, which statutorily provides grants of $4,550 (doctoral), $950 (masters), $1,500(bachelors) and $600 (associates) to private colleges and universities in New York State for each degree they award to residents of the state. Due to state budget cuts over a number of years, the actual grant levels received by the private colleges were approximately one third of the statutory levels in 2000-2001

Many states also provide grants to state residents that attend either public or private institutions in the state and the magnitudes of this aid vary widely across states and have been increasing over time (National Association of State Student Grant and Aid Programs). While in some states this aid is primarily need based, in others it is increasingly not, the Georgia Hope Scholarship being an example of non-need based aid. Analyzing tuition levels at public and private institutions within a state without consideration of these state financial aid programs obviously is a mistake.

States also differ in terms of how public higher education within the state is organized for governance purposes. In some states there is a single state coordinating board that either sets tuition levels at each public institution, or makes recommendations for tuition levels to the governor or the legislature. In other states there are multiple boards. In an important paper, Lowry (2000) has shown that the numbers of these boards and how their members and the members of individual public institutions' boards of trustees are chosen have an impact on the tuition levels charged by the institutions and their appropriation levels. In particular, higher levels of state control and a greater share of board members being chosen by voters or appointed by politicians appear to be associated with lower tuition levels at public institutions.

While at one time by far the majority of college students attended college in the state in which they graduated from high school, increasingly students now attend college out-of-state (Hoxby, 1997). She and others have attributed this trend to reductions in transportation and communication costs, changes in federal financial aid policies and the increasing desire of students to "buy the best". The growing willingness of students to attend college further away from their homes, coupled with the reductions in state support (in real terms) for public higher education institutions that took place in many states during the late 1980s and early 1990s provides an incentive for public institutions to try to enhance their revenues by enrolling more out-of-state students.

Previous research has indicated that out-of-state students are attracted to high quality institutions and that the higher the quality of an institution the higher the out-of-state tuition that can be charged ((Mixon and Hsing, 1994) and (Green, 1992)). This provides an extra incentive for administrators at the public institutions to try to enhance their institution's quality. However, Groen and White (2000) have shown that there is an inherent conflict between what administrators feel is best for the institution and what may be best for a state in terms of the likely probabilities that students educated at the institution remain in the state and contribute to the state's economic well-being and tax revenue, as well as provide future financial contributions to the institution. They find that states are better off when public universities are not selective and restrict out of state admissions

The proportions of students that come from out-of-state vary widely across the public institutions that are considered to be among our nation's finest. For example, while the proportion of first-time freshman who came from out of state was about 35 to 40

percent at Michigan, Virginia, Pennsylvania State and Wisconsin-Madison in a recent year, it was less than 10 percent at California-Berkeley and less than 20 percent at North Carolina-Chapel Hill. Moreover, these proportions have been increasing at most of the institutions over time.

Research is needed to explain both inter institutional variations in the proportions of out-of-state students at a point in time and changes in these proportions at different institutions over time. Such research should also examine differences across institutions and changes over time in the tuition premium that out-of-state students are charged. For example, in a recent year the mean absolute out-of-state tuition premium charged undergraduates across *U.S News and World Report s* top 35 Public National Universities was $7,340 dollars, but the premium varied from about $4,000 to over $12,000.

Such research will be complicated by the fact that in a number of states with considerable excess capacity in at least some of their public institutions (those less attractive to in-state students) have an incentive to use low out-of-state tuition levels to try to attract students from other states. Also, to provide increased access for state residents to unique programs offered by public institutions in nearby states, a state may enter into a cooperative agreement with a neighboring state or states to provide access to residents of other states at its higher education institutions (or a subset of its institutions) on a space available basis, at its in-state tuition level or a level lower than it customarily charges out-of-state students. Data collected periodically as part of IPEDS may permit researchers to investigate what fraction of out-of-state students at an institution are enrolled under such programs.

Public higher educational institutions include 2-year, 4-year, comprehensive (undergraduate plus masters' programs) and doctoral institutions, as well as stand-alone professional schools. Nationally, the share of first-time freshman in public institutions that enrolled in 2-year colleges fell from about 63 percent in the fall of 1976 to 57 percent in the fall of 1996. This share also varies widely across states. For example, while the share was 78 percent in California in 1976, it was 65 percent in Mississippi, 55 percent in New Jersey, 45 percent in Tennessee, 32 percent in Virginia, 23 percent in Indiana, and 11 percent in Montana. These numbers are for all first-time freshmen. If instead one looks at the shares of first-time full-time freshman, the shares are somewhat lower but the pattern is similar. For example, the share of first-time full-time freshman in public institutions that enrolled in 2-year colleges fell from about 46 percent in the fall of 1976 to 42 percent in the fall of 1996.

A topic that has yet to be researched is why states have chosen to organize students' initial access to public higher education in such vastly different ways? It is cheaper to educate a freshman in a two-year institution than it is in a 4-year institution, which in turn is cheaper than it is at a doctoral institution. Hence part of the explanation may involve differences in income and wealth across states and over time. So too may the presence of Historically Black Colleges and Universities (HBCUs) in some states. HBCUs are predominantly 4-year institutions and research has shown that at the undergraduate level they tend to enroll African American students who otherwise would have gone to other 4-year and 2-year institutions (Ehrenberg, Rothstein and Olsen, 1999). Finally, economies of scale may lead some small population states to concentrate most of their public higher educational resources in one relatively large university.

A host of other distributional issues arise when one considers state support of public and private higher education. Differences in the types of institutions that students from different socioeconomic, ethnic and racial groups attend within a state lead to the need for research relating to the distribution of benefits from state support of public and private higher education across different groups in a state, of the type that Hansen and Weisbrod (1969) undertook for public higher education in California over thirty years ago. The distributions of benefits will be influenced by differences in state appropriations to public higher education, tuition policies at both public and private institutions, state aid to private higher educational institutions, other resources that the institutions can bring to bear on educating their students, and state financial aid policies. The latter may influence students' progress towards their degrees and persistence in majors. Recent research on the Hope Scholarship program in Georgia addresses these latter issues (Dee and Mustard, 1999) and Dynarski (2000) has looked at whether the Hope Scholarship program has led to a widening in the college attendance gap between students from lower- and middle-income families.

Distributional outcomes are also determined by which the prestige public institutions are in a state and how admission to these institutions is rationed. In some states, California is an example, the most prestigious public undergraduate institutions are the large elite research universities. In other states, for example Ohio, Miami University rather than the prestigious research university, Ohio State, is the public campus that enrolls the students with the highest SAT scores. Why do such differences exist across states?

How students gain admission to the top institutions also matters. A recent court cases in Texas, a referendum in California, and voluntary state policy in Florida, have led these states to abandon systems of affirmative action or racial preference and move to systems in which the top "x" percent of students that graduate from each high school in the state are guaranteed admission to the state university system. In California and Texas, the policies to not specify to which institution within the system the students will be admitted, while in Florida, the policy holds for every institution. What are the distributional impacts of such admission systems relative to admission systems such as that in place at the University of Michigan, that involves multiple considerations including grades, test scores, high school courses and diversity among other factors?

III. The Growing For-Profit Sector, Distance Learning, and the Div. rsification of Higher Education Institutions Revenue Sources

There has long been a proprietary, or for-profit, sector in post-secondary education. For the most part it consisted of organizations that provided vocational training in programs that lasted relatively short periods of time. The sector received a major boost when students enrolling in proprietary school programs were made eligible for federal financial aid programs including the Basic Educational Opportunity Grant (BEOG), or Pell Grant, program and the Stafford subsidized loan program. The share of funds under these programs that were received by students enrolled in proprietary schools increased over time until they reached a peak in the 1987. That academic year, proprietary school students received almost 27 percent of all BEOG funds and that fiscal

year, they received almost 35 percent of all Stafford loan funds. Since that date, proprietary schools' shares of these programs' funds have declined.

Accredited proprietary college and university programs are a more recent phenomenon. Within the decade of the 1990s, major growth has occurred and institutions such as the University of Phoenix, Devry and ITT Educational Services now have campuses all around the country (Strosnider 1998). The University of Phoenix alone enrolled over 75,00 students in its degree programs at campuses in 15 states, Puerto Rico and Canada in 1999-2000 and it is now the largest private university in the country in terms of headcount enrollment. By February 2001, it expects to open campuses and become accredited in three more states (Blumenstyk 2000). The University of Phoenix and a few other proprietary providers also currently offer some college degrees fully over the Internet. They are shortly to be joined by the educational publisher Harcourt General, which is on the verge of being accredited as an online college by the Massachusetts Higher Education Board (Kirkpatrick, 2000).

The growth of these proprietary institutions has undoubtedly been stimulated by the growth of the Internet, the growing economic returns to higher education, the growing need in the economy for lifelong learning, the subsequent increase in the number of older adults seeking college education and the increasing tuition costs of private nonprofit higher education. Gordon Winston (1999b) has very eloquently discussed which sectors of the public and private nonprofit higher education industry face the largest threats from the growing proprietary sector. He identifies the most vulnerable institutions as those that currently have the smallest "subsidy" resources and shows that most of these vulnerable

institutions are either private 2-year, small private liberal arts or private comprehensive institutions.

Assuming that Winston's analyses are correct, to survive the increasing competition from the proprietary sector these organizations will have to reduce the net tuition that they charge their students. This will require them to reduce their cost structures and/or to diversify their revenue streams. They will also have to pay attention to how the proprietary institutions are tailoring the delivery of their programs to the needs of working adults and respond by altering their own behavior. Case studies of how, if at all, these institutions are reacting to the threat posed to them from the proprietary sector would be very useful.

I have argued elsewhere that the need for these institutions to diversify their revenue streams is a need that is shared more generally by almost all public and private nonprofit higher educational institutions (Ehrenberg 2000b). The publics need to do so to make up for the inability, or unwillingness, of many state governments to provide them with the growth in funding that is necessary to maintain their quality and meet the growing demand for public higher education that is projected over the next decade. The privates, and to some extend the publics, need to do so if they wish to prosper in the years ahead because there appears to be growing public resistance to their continuing to raise tuition at rates 2 to 3 percentage points above inflation. How institutions diversify their revenue streams will depend largely on the nature of each institution and the local conditions it faces. However, we can expect to see the continued expansion of professional masters programs, continuing and executive education programs and distance learning, as well as the increased commercialization of research.

Distance learning and the commercialization of research raise important academic freedom and intellectual property issues that academic institutions and their faculty members are working to resolve. Research universities differ widely in terms of the ratio of the revenue they receive each year from the commercialization of their research to their total annual research volume. It would be interesting to learn if this variation reflects idiosyncratic factors (an entrepreneurial administrator, a single large revenue generating patent) or more systematic forces such as the resources that the institution devotes to commercialization and the research areas in which the institution is strong.

Just as the reduction in transportation and communication costs has made the student bodies at many institutions more national and international during recent decades, changes in technology have effectively expanded markets for distance learning. Institutions can easily expand the reach of their degree programs far beyond their initial campuses. Some have aggressively sought to do so; for example residents of the state of Pennsylvania now can take degree programs by distance learning from Old Dominion University, a public doctoral university in Virginia. Other institutions offer executive MBA programs primarily by distance learning. Still other institutions are choosing to focus on certificate programs and other ways to commercialize their intellectual property, without "watering down" the value of their on-campus degree programs.

Are the institutions all "groping" or do the strategies that are being pursued vary systematically with measurable characteristics of the institutions? Are the institutions that are most heavily invested in distance learning activities the ones that have the greatest financial need to be involved in distance learning? Do the revenues that are generated from these activities serve only to make the activities self-supporting or do they provide

funding for other core missions of the institutions? Have institutions that have not moved aggressively in this direction been placed at a competitive disadvantage relative to their competitors or have they gained by observing the errors of the "first movers". There is much speculation but very little hard evidence on these issues.

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